

Claims

1. A heat exchanger for a fluid circuit through which  
a heat transfer fluid runs, comprising: at least one  
5 manifold delimiting an inlet and an outlet for the heat  
transfer fluid; circulation ducts for the heat transfer  
fluid which are inserted between the inlet and the  
outlet; heat-exchange surfaces associated with the heat  
transfer fluid circulation ducts and able to be swept  
10 by a flow of air that is to be conditioned; cavities  
designed to contain a heat storage fluid, situated  
adjacent to the heat transfer fluid circulation ducts;  
whereby the cavities associated with the heat-exchange  
surfaces in such a way that the heat storage fluid is  
15 able to exchange heat with the air flow that sweeps the  
heat-exchange surfaces if the circulation of the heat  
transfer fluid through the circuit is stopped.

2. The heat exchanger as in claim 1, further  
20 comprising a multiplicity of parallel flat tubes  
having two opposed large faces and in which the ducts  
and the cavities are formed, and a multiplicity of  
corrugated inserts forming heat-exchange surfaces, each  
of which is arranged between two adjacent tubes.

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3. The heat exchanger as in claim 2, wherein each  
flat tube is made up of two parts in the form of  
plates, namely a part in which the ducts are formed and  
a part in which the cavities are formed.

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4. The heat exchanger as claimed in claim 2, wherein  
each flat tube is of one piece, and in that the ducts  
are arranged along one of the large faces, while at  
least one cavity is arranged along the other large  
35 face.

5. The heat exchanger as claimed in claim 2, wherein  
each flat tube is of one piece, the ducts are arranged  
in groups between the large faces, and the cavities are

arranged in groups between the large faces, the groups of ducts alternating with the groups of cavities.

6. The heat exchanger as claimed in claim 1, further  
5 comprising a multiplicity of flat tubes in the shape of a hairpin or of a capital U, in which the ducts and the cavities are formed, and a multiplicity of corrugated inserts forming heat-exchange surfaces, each of which is arranged between two adjacent tubes.

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7. The heat exchanger as claimed in claim 6, wherein each U-shaped flat tube is of one piece.

8. The heat exchanger as claimed in claim 1, further  
15 comprising a flat tube in the form of a coil in which the ducts and the cavities are formed.

9. The heat exchanger as claimed in claim 8, wherein  
20 the coil-shaped flat tube is formed of a multiplicity of U-shaped inner tubes in which the ducts are formed and of a coil-shaped outer tube surrounding the U-shaped tubes and in which the cavities are formed.

10. The heat exchanger as in claim 2, wherein the  
25 tubes are formed by extruding a metallic material, advantageously one based on aluminum.

11. The heat exchanger as in claim 6, wherein the tubes  
30 are formed by extruding a metallic material, advantageously one based on aluminum.

12. The heat exchanger as in claim 1, further  
comprises at least one conduit which communicates with the cavities.

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13. The heat exchanger as in claim 2, further comprises at least one conduit which communicates with the cavities.

14. The heat exchanger as in claim 6, further comprises at least one conduit which communicates with the cavities.

5 15. The heat exchanger as in claim 1, wherein it is made in the form of an evaporator designed to have a cooling fluid running through it and to cool the flow of air which sweeps across the heat-exchange surfaces, and in that the heat storage fluid is a phase-change  
10 fluid with a melting point of between 0°C and 10°C, preferably between 5°C and 7°C, so that the heat storage fluid is capable of cooling the flow of air which sweeps across the heat-exchange surfaces if the circulation of the cooling fluid is temporarily  
15 stopped.

16. The heat exchanger as in claim 2 ,wherein it is made in the form of an evaporator designed to have a cooling fluid running through it and to cool the flow  
20 of air which sweeps across the heat-exchange surfaces, and in that the heat storage fluid is a phase-change fluid with a melting point of between 0°C and 10°C, preferably between 5°C and 7°C, so that the heat storage fluid is capable of cooling the flow of air  
25 which sweeps across the heat-exchange surfaces if the circulation of the cooling fluid is temporarily stopped.

17. The heat exchanger as in claim 6, wherein it is made in the form of an evaporator designed to have a  
30 cooling fluid running through it and to cool the flow of air which sweeps across the heat-exchange surfaces, and in that the heat storage fluid is a phase-change fluid with a melting point of between 0°C and 10°C,  
35 preferably between 5°C and 7°C, so that the heat storage fluid is capable of cooling the flow of air which sweeps across the heat-exchange surfaces if the

circulation of the cooling fluid is temporarily stopped.

18. The heat exchanger as in claim 1, wherein it is  
5 made in the form of a heating radiator designed to have  
a heating fluid running through it and to heat up the  
flow of air which sweeps across the heat-exchange  
surfaces, and in that the heat storage fluid  
10 constitutes a reserve of heat, so that the heat storage  
fluid is capable of heating up the flow of air which  
sweeps across the heat-exchange surfaces if the  
circulation of the heating fluid through the heating  
radiator is temporarily stopped.

15 19. The heat exchanger as in claim 2, wherein it is  
made in the form of a heating radiator designed to have  
a heating fluid running through it and to heat up the  
flow of air which sweeps across the heat-exchange  
surfaces, and in that the heat storage fluid  
20 constitutes a reserve of heat, so that the heat storage  
fluid is capable of heating up the flow of air which  
sweeps across the heat-exchange surfaces if the  
circulation of the heating fluid through the heating  
radiator is temporarily stopped.

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20. The heat exchanger as in claim 3, wherein it is  
made in the form of a heating radiator designed to have  
a heating fluid running through it and to heat up the  
flow of air which sweeps across the heat-exchange  
30 surfaces, and in that the heat storage fluid  
constitutes a reserve of heat, so that the heat storage  
fluid is capable of heating up the flow of air which  
sweeps across the heat-exchange surfaces if the  
circulation of the heating fluid through the heating  
35 radiator is temporarily stopped.

21. The heat exchanger as claimed in claim 15, wherein  
the heat storage fluid is a phase-change fluid with a

melting point of between 60 and 90°C, preferably between 70 and 80°C.

22. The heat exchanger as in claims 15, wherein the  
5 heat storage fluid is chosen from paraffins, hydrated salts and eutectic compounds.

23. The heat exchanger as in claims 16, wherein the  
10 heat storage fluid is chosen from paraffins, hydrated salts and eutectic compounds.

24. The heat exchanger as in claims 17, wherein the  
heat storage fluid is chosen from paraffins, hydrated salts and eutectic compounds.

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25. The heat exchanger as in claim 15, wherein the heat storage fluid is water.

26. The heat exchanger as in claim 16, wherein the heat  
20 storage fluid is water.